

WHAT IS CLAIMED IS:

1. A a method for controlling switching in a bidirectional line-switched ring network configured by a plurality of optical fibers and a plurality of nodes,

5 (i) having a first node receive as input an LP-S (lockout of protection (span)) command and having a second node adjacent to the first node receive the switch request from the first node via the optical fibers, and

10 (ii) having the second node send a ring switch request to other nodes when the second node detects a failure in the line over which it receives a signal from the first node under the above state (i).

2. A method of controlling switching in a bidirectional line-switched ring network configured by a plurality of optical fibers and a plurality of nodes,

15 (i) having a first node detect a failure of a receiving protection channel from an adjacent second node and having the second node receive a switch request from the first node via the optical fibers, and

20 (ii) having the second node transmit a ring switch request to other nodes when the second node detects the failure of the receiving channel from the first node under the above state (i).

3. A method for controlling switching in a bidirectional line-switched ring network as set forth in claim 1, wherein relay nodes between said first node and said second node enter into a K byte pass-through state allowing only the K bytes to pass therethrough when receiving a switch request having the highest priority level directed to said second node from said first node.

35 4. A method for controlling switching in a bidirectional line-switched ring network as set forth in claim 2, wherein relay nodes between said first node and said second node enter into a K byte pass-through state allowing only the K bytes to pass therethrough when receiving a switch request having the highest priority level directed to said second node from said first node.

5. A method for controlling switching in a bidirectional line-switched ring network configured by a plurality of optical fibers and a plurality of nodes,

having relay nodes other than two adjacent nodes connected to two ends of a span to be switched enter a K byte pass-through state allowing only the K bytes to pass therethrough due to a span switch request directed from one of said two adjacent nodes to the other, and

having them maintain the K byte pass-through state when they receive a ring switch request directed from one of said two adjacent nodes to the other under the above entered K byte pass-through state.

6. A method for controlling switching in a bidirectional line-switched ring network configured by a plurality of optical fibers and a plurality of nodes,

having a first node receiving a ring switch request from a second node among two adjacent nodes connected to two ends of a span to be switched only transmit a ring switch request corresponding to that ring switch request, not execute the related ring switch, and maintain an idle state when the first node has received an LP-S (lockout of protection (span)) command or SF-P (signal fail (protection) command before that.

7. A method for controlling switching in a bidirectional line-switched ring network configured by a plurality of optical fibers and a plurality of nodes,

having relay nodes other than two adjacent nodes connected to two ends of a span to be switched enter a full pass-through state due to a ring switch request transmitted from one node of said two adjacent nodes to the other node and,

when they receive a span switch request directed to the other node from said one node under the above entered full pass-through state,

having them compare priority levels of

said received ring switch request and said span switch request and enter into the K byte pass-through state allowing only the K bytes to pass therethrough where the span switch request has a higher priority level and a status code according to the ring switch request is not a ring bridge or ring switch.

8. A method for controlling switching in a bidirectional line-switched ring network configured by a plurality of optical fibers and a plurality of nodes,
(i) having a first node receive as input an LP-S (lockout of protection (span)) command and having a second node adjacent to the first node receive a switch request from the first node via said optical fibers, and
(ii) having said second node transmit a ring switch request to other nodes when said second node detects a failure of the received channel from said first node under the above state (i).

9. A method for controlling switching in a bidirectional line-switched ring network configured by a plurality of optical fibers and a plurality of nodes,
(i) having a first node detect a failure of a protection channel received from an adjacent second node, having the second node receive a switch request from the first node via said optical fibers, and
(ii) having said second node transmit a ring switch request to other nodes when said second node detects a failure of the receiving channel from the first node under the above state (i).

10. A method for controlling switching in a bidirectional line-switched ring network configured by a plurality of optical fibers and a plurality of nodes,
having a first node of the first node and a second node adjacent thereto across a span to be switched receive a switch request EXER-R (exerciser (ring)) from the second node during the execution of a switch request SF-P (signal fail (protection)), and
having said first node transmit a switch

request SF-R (signal fail (ring)).

11. A method for controlling switching in a
bidirectional line-switched ring network configured by a
plurality of optical fibers and a plurality of nodes,
5 differentiating between a switch request
LP-S (lockout of protection (span)) and a switch request
SF-P (signal fail (protection)) using unused bit regions
in K bytes when selectively transmitting at least LP-S
and SF-P from a node connected to a span to be switched
10 by utilizing the K bytes.

Approved for Release